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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,925	11/13/2001	Seiichi Mita	500.36414CX1	6695
24956	7590	03/10/2005	EXAMINER	
MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C. 1800 DIAGONAL ROAD SUITE 370 ALEXANDRIA, VA 22314			WARE, CICELY Q	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/986,925	MITA ET AL.
	Examiner Cicely Ware	Art Unit 2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 13 November 2001.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 17-30 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 17,23 and 25-30 is/are rejected.
 7) Claim(s) 18-22 is/are objected to.
 8) Claim(s) 24 are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 13 November 2001 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 3.

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because:
 - a. Pg. 35, line 7, applicant uses the phrase "to thereby producing". Examiner suggests using "to thereby produce" for clarification purposes.
Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities:
 - a. Pg. 2, line 13, applicant uses the phrase "processing system. original data". Examiner suggests using "processing system. Original data". For clarification purposes.
 - b. Pg. 3, line 3, applicant uses the phrase "in more in detail". Examiner suggests using "in more detail" for clarification purposes.
 - c. Pg. 6, line 10, applicant uses "specifie-state". Examiner suggests using "specific-state" for clarification purposes.
 - d. Pg. 7, lines 15-16, examiner suggests applicant delete the space in between these lines for clarification purposes.
 - e. Pg. 8, lines 14-15, examiner suggests applicant insert line 15 onto line 14 for clarification purposes.
 - f. Pg. 10, line 7, examiner suggests applicant re-write this line for clarification purposes.
 - g. Pg. 14, lines 16-17, examiner suggests applicant insert line 17 onto line 16

for clarification purposes.

h. Pg. 16, lines 12-13, examiner suggests applicant insert line 13 onto line 12 for clarification purposes.

i. Pg. 17, lines 19-20, examiner suggests applicant insert line 20 onto line 19 for clarification purposes.

j. Pg 18, line 1, applicant uses the phrase "It should understood". Examiner suggests using "It should be understood" for clarification purposes.

Appropriate correction is required.

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claims 1, 24 are objected to because of the following informalities:

a. Claim 1, examiner suggests applicant define all equation elements i.e. D and c_0, c_1, \dots

b. Claim 24, line 2, applicant uses the phrase "selected so as that data". Examiner suggests using "selected so that data" for clarification purposes.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. Claim 24 is rejected under 35 U.S.C. 101 because:
 - a. Claim 24 recites data being modulated by said demodulator. Examiner asserts that a demodulator demodulates data and a modulator modulates data. Therefore claim 24 has not been further treated on the merits.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chevillat et al. (US Patent 5,784,415) in view of Behrens et al. (US Patent 5,291,499).

With regard to claim 17, Chevillat et al. discloses a signal processing circuit comprising an equalizer for equalizing an input signal based on partial response characteristics having $(I-D^2)$; a discrete filter for converting the output from said equalizer into a waveform of $(I-D^2)(c_0 + c_1D + \dots + c_nD^n)$ (col. 4, lines 43-62, col. 7, lines 35-37).

However Chevillat et al. does not disclose a maximum-likelihood-demodulator for demodulating data output from said discrete filter.

However Behrens et al. discloses a maximum-likelihood-demodulator for demodulating data output from said discrete filter (col. 1, lines 12-14, 38-41, col. 5, lines

12-20, col. 7, lines 19-23, col. 8, lines 38-49, col. 11, lines 10-16, 36-39, col. 12, lines 57-59, col. 14, lines 58-62, col. 21, lines 42-45).

Therefore it would have been obvious to one of ordinary skill in the art to modify Chevillat et al. in view of Behrens et al. to incorporate a maximum-likelihood-demodulator for demodulating data output from said discrete filter in order to construct a best estimate of the channel bits that were written base on digitized samples captured from the analog read signal (Behrens et al., col. 1, lines 38-41).

Double Patenting

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 23, 25-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2, 6, 8, 13 and 14 of U.S. Patent No. 6,337,889 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

1. Claim 23 of the present application recites all the limitations of claim 8 of the patent.
2. Claims 25 and 26 of the present application recite all the limitations of claims 13 and 14 of the patent.
3. Claim 27 of the present application recites all the limitations of claim 1 of the patent. It is inherent that a partial response equalizer processes a symmetrical response.
4. Claim 28 of the present application recites all the limitations of claim 2 of the patent.
5. Claims 29 and 30 of the present application recite all the limitations of claim 6 of the patent.

Allowable Subject Matter

11. Claims 18-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for

the indication of allowable subject matter: The instant application discloses a signal processing circuit. Prior art references (Behrens et al. US Patent 5,291,499) show similar methods but fail to teach: “**wherein the output waveform of said discrete filter is $(I-D^2)(c_0 + c_1D + \dots + c_2D^2)$, and the coefficients (c_0, c_1, c_2) are (3, 2, 1) respectively**”, as in claim 18; “**wherein the output waveform of said discrete filter is $(I-D^2)(c_0 + c_1D + \dots + c_2D^2)$, and the coefficients (c_0, c_1, c_2) are (5, 4, 2) respectively**”, as in claim 19; “**wherein the output waveform of said discrete filter is $(I-D^2)(c_0 + c_1D + \dots + c_2D^2)$, and the coefficients (c_0, c_1, c_2) are (2, 2, 1) respectively**”, as in claim 20; “**wherein the output waveform of said discrete filter is $(I-D^2)(c_0 + c_1D + \dots + c_2D^2)$, and the coefficients (c_0, c_1, c_2, c_3) are (2, 5, 3, 2) respectively**”, as in claim 21; “**wherein the output waveform of said discrete filter is $(I-D^2)(c_0 + c_1D + \dots + c_2D^2)$, and the coefficients (c_0, c_1, c_2, c_3) are (2, 4, 2, 1) respectively**”, as in claim 22.

Conclusion

12. The prior art made record of and not relied upon is considered pertinent to applicant's disclosure:

- a. Nobakht US Patent 6009120 discloses a multi-dimensional combined equalizer and decoder.
- b. Cloke US Patent 6411452 discloses a disk drive employing read error tolerant sync mark detection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 571-272-3047. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Cicely Ware

cqw
February 25, 2005

Amanda T. Le
AMANDA T. LE
PRIMARY EXAMINER